

CLAIMS

We claim:

- 5           1. A method for presenting a runtime environment component service by a first computer system to a second computer system over a communication network, said method being performed by said first computer system and comprising:
- 10                 generating a user interface infrastructure, on said first computer system, to receive graphic user interface events from said second computer system and to send remote graphic user interface commands to said second computer system; and
- 15                 using said user interface infrastructure to initialize said runtime environment component service wherein said runtime environment component service sends graphic user interface commands to said user interface infrastructure.
- 20           2. The method of Claim 1 further comprising:
- receiving by said user interface infrastructure a remote input action event via said communication network, said remote input action event being generated in said second computer
- 25                 system by a lightweight component corresponding to said runtime environment component service.
3. The method of Claim 2 further comprising:
- 30                 transmitting an input event to said runtime environment component service by said user interface infrastructure in response to said remote input action event.
- 35           4. The method of Claim 3 further comprising:

processing said input event by said runtime environment component service.

5. The method of Claim 4 further comprising:

5       generating a graphic user interface command to said user interface infrastructure by said runtime environment component service.

6. The method of Claim 5 further comprising:

10       transmitting a remote graphic user interface command to said lightweight component by said graphic user interface infrastructure in response to said graphic user interface command.

15       7. A method for presenting a runtime environment component service by a first computer system to a second computer system over a communication network, said method being performed by said first computer system and comprising:

20       receiving a remote input action command for a runtime environment component service via said communication network, said remote input action command being generated in said second computer system by a lightweight component corresponding to said runtime environment component service;

25       transmitting a local input action command to said runtime environment component service in response to said remote input action command;  
      processing said local input action command by said runtime environment component service;

30       generating a local output command by said runtime environment component service for a graphical user interface; and

35       transmitting a remote output command to said lightweight component in response to said local output command.

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8. The method of Claim 7 wherein said runtime environment component service is in an office application suite.

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9. The method of Claim 7 wherein said method further comprises:

receiving said local output command by a local window object and in response generating said remote output command by said local window object

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10. The method of Claim 7 wherein said method further comprises:

receiving said remote input action command by a local window object and in response generating said local input action command by said local window object.

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11. The method of Claim 9 wherein said method further comprises:

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receiving said remote input action command by said local window object, and in response generating said local input action command by said local window object.

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12. The method of claim 10 wherein said remote input action command is a user interface event.

13. The method of claim 11 wherein said remote input action command is a user interface event.

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14. A method comprising:

receiving a command by a service executing on a computer system to create an infrastructure for executing a runtime environment component service,

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wherein said command is from a component executing on a user device; and

issuing an instruction to create an instance of a remote frame window on said user device.

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15. The method of Claim 14 further comprising:  
generating an instance of a local window on said computer system by said service, wherein said local window issues remote instructions to said remote window frame in response to instructions from said runtime environment component service.

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16. The method of Claim 15 further comprising:  
querying said remote frame window by said local window to determine properties of said remote frame window.

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17. The method of Claim 15 further comprising:  
generating, on said computer system, a local frame for said local window.

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18. The method of Claim 17 further comprising:  
receiving, by said local frame, a command from said user device to load a document.

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19. The method of Claim 18 further comprising:  
issuing, in response to said command to load a document, a command by said local frame to said runtime environment component service to create an instance of a runtime environment component service window on said computer system.

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20. The method Claim 19 further comprising;  
issuing a command by said local frame to said runtime environment component service to load said

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document in said runtime environment component service window.

21. The method of Claim 20 further comprising:

5       issuing a command from said runtime environment component service to said local window to display said document.

22. A method for enabling a user device to run a runtime environment component on another computer, said method comprising:

15       running a browser on said user device; and  
      running a lightweight component within said browser, wherein said lightweight component receives user input actions on said user device and generates corresponding user interface events to said another computer for processing by said runtime environment component.

20       23. The method of Claim 22 further comprising:  
      downloading lightweight component into said user device.

24. A computer program product comprising computer code comprising:

25       a remote frame window class comprising:  
          a remote output device interface; and  
          a remote frame window interface.

30       25. The computer program product of Claim 24 wherein said computer code further comprises:

      a bean frame class comprising a frame interface

35       26. The computer program product of Claim 24 wherein said computer code further comprises:

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a bean window class comprising:  
an event handler interface; and  
an window peer interface.

5           27. The computer program product of Claim 24  
wherein said computer code further comprises:  
an abstract windowing toolkit.

10           28. A computer program product comprising computer  
code for a method for presenting a runtime environment  
component service by a first computer system to a second  
computer system over a communication network, said  
method being performed by said first computer system,  
said method comprising:

15           generating a user interface infrastructure, on  
said first computer system, to receive graphic user  
interface events from said second computer system  
and to send remote graphic user interface commands  
to said second computer system; and  
20           using said user interface infrastructure to  
initialize said runtime environment component  
service wherein said runtime environment component  
service sends graphic user interface commands to  
said user interface infrastructure.

25           29. A computer program product comprising computer  
code for a method for presenting a runtime environment  
component service by a first computer system to a second  
computer system over a communication network, said  
30           method being performed by said first computer system and  
comprising:

receiving a remote input action command for a  
runtime environment component service via said  
communication network, said remote input action  
35           command being generated in said second computer

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system by a lightweight component corresponding to  
said runtime environment component service;

transmitting a local input action command to  
said runtime environment component service in

5 response to said remote input action command;

processing said local input action command by  
said runtime environment component service;

generating a local output command by said  
runtime environment component service for a

10 graphical user interface; and

transmitting a remote output command to said  
lightweight component in response to said local  
output instruction.

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